CLAIMS

What is claimed is:

1. A cathode active material comprising:

a lithium transition metal composite oxide in which a carbon compound is adsorbed to obtain a carbon content of 10-1,000 ppm.

2. The cathode active material of claim 1, wherein the lithium transition metal composite oxide is at least one selected from the group consisting of $LiNiO_2$, $LiCoO_2$, $LiMn_2O_4$, $LiFePO_4$, $LiNi_xCo_{1-x}O_2$ where $0 < x < 1$, and $LiNi_{1-x-y}Co_xMn_yO_2$ where $0 < x < 1$, $0 < y < 1$, and $0 < x+y < 1$.

3. The cathode active material of claim 1, wherein the carbon compound has a specific surface area of 10-5,000 m^2/g.

4. A method of preparing the cathode active material of claim 1, the method comprising:

mixing a transition metal compound and a lithium compound in a molar ratio of 1:1.0-1:1.2; and

thermally treating the mixture while supplying CO_2 and O_2 in a ratio of partial pressures ranging from 1:0.001-1:1000.

5. The method of claim 4, wherein the thermally treating of the mixture is performed at a temperature of 600-1,000 °C.

6. The method of claim 4, wherein the lithium compound is selected from the group consisting of lithium carbonate, lithium hydroxide, lithium nitrate, lithium sulfate, lithium acetate, and lithium oxide.

7. The method of claim 4, wherein the transition metal compound is selected from the group consisting of a transition metal carbonate, a transition metal hydroxide, a transition metal nitrate, a transition metal sulfate, a transition metal acetate, and a transition metal oxide.

8. A lithium battery comprising:

a cathode comprising:

a cathode active material that comprises a lithium transition metal composite oxide in which a carbon compound is adsorbed to obtain a carbon content of 10-1,000 ppm;

an anode comprising a carbonaceous material to facilitate intercalating and deintercalating lithium ions;

a separator interposed between the cathode and the anode;

an electrolytic solution containing an electrolytic solute dissolved in a nonaqueous solvent; and

a current cut-off device that operates in response to a rise in an internal pressure of the lithium battery.

9. A lithium battery comprising:

a cathode comprising:

a cathode active material that comprises a lithium transition metal composite oxide in which a carbon compound is adsorbed to obtain a carbon content of 10-1,000 ppm and wherein the lithium transition metal composite oxide is at least one selected from the group consisting of $LiNiO_2$, $LiCoO_2$, $LiMn_2O_4$, $LiFePO_4$, $LiNi_xCo_{1-x}O_2$ where $0 < x < 1$, and $LiNi_{1-x-y}Co_xMn_yO_2$ where $0 < x < 1$, $0 < y < 1$, and $0 < x+y < 1$;

an anode comprising a carbonaceous material to facilitate intercalating and deintercalating lithium ions;

a separator interposed between the cathode and the anode;

an electrolytic solution containing an electrolytic solute dissolved in a nonaqueous solvent; and

a current cut-off device that operates in response to a rise in an internal pressure of the lithium battery.

10. A lithium battery comprising:

a cathode comprising:

a cathode active material that comprises a lithium transition metal composite oxide in which a carbon compound is adsorbed to obtain a carbon content of 10-1,000 ppm and wherein the carbon compound has a specific surface area of 10-5,000 m^2/g;

an anode comprising a carbonaceous material to facilitate intercalating and deintercalating lithium ions;

a separator interposed between the cathode and the anode;

an electrolytic solution containing an electrolytic solute dissolved in a nonaqueous solvent; and

a current cut-off device that operates in response to a rise in an internal pressure of the lithium battery.

11. The method of claim 4, wherein the ratio of partial pressures ranges from 1:1 to 1:100.

12. The method of claim 4, wherein the ratio of partial pressures ranges from 1:1 to 1:10.

13. The lithium battery of claim 8, wherein the separator is selected from the group consisting of a glass fiber, polyester, TEFLON, polyethylene, polypropylene, polytetrafluoroethylene, and a combination of thereof.

14. The lithium battery of claim 9, wherein a polymer resin is utilized as a binding agent for the anode and the cathode, and wherein the polymer resin is a vinylidenefluoride-hexafluoropropylene copolymer having 8-25% by weight of hexafluoropropylene.